UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES M. REUTER, DAVID W. THIEL, ROBERT G. BEAN, and RICHARD F. WRENN

Appeal 2006-2843
Application 09/872,970
Technology Center 2100

Decided: February 28, 2007

Before JAMES D. THOMAS, JOSEPH F. RUGGIERO, and MAHSHID D. SAADAT, *Administrative Patent Judges.*

RUGGIERO, *Administrative Patent Judge.*

DECISION ON APPEAL

This appeal involves claims 1-30, 34, 36-40, the only claims pending in this application. Claims 31-33 and 35 have been canceled. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b) (2002).

INTRODUCTION

The claims are directed to a virtual storage system in which virtualization mapping is distributed over multiple parallel mapping agents which are separate from a controller. The mapping agents store the virtual mapping tables in non-volatile memory while a separate centralized controller is responsible for the control of the mapping process and the persistent storage of the mapping tables. Claim 1 is illustrative:

> 1. A virtual storage system for linking a host to one or more storage devices over a network, the system comprising:
>
> an agent connected to the host, the agent having volatile memory for storing a first copy of a table, the table having entries to map virtual disk positions to locations on the storage devices; and
>
> a controller coupled to the agent, the controller having non-volatile memory for storing a second copy of the table, the controller intermittently causing contents of the first copy of the table to be replaced by contents of the second copy of the table,
>
> whereby during an input/output (I/O) operation, the host accesses one of the entries in the table stored on the agent to determine one of the storage device locations.

The Examiner relies on the following prior art references to show unpatentability:

Casorso	US 5,404,361	Apr.04, 1995
Blumenau	US 6,260,120	Jul. 10, 2001 (filed Jun. 29, 1998)

The rejection as presented by the Examiner is as follows:

Claims 1-30, 34, and 36-40, all of the appealed claims, are rejected under 35 U.S.C § 103(a) as unpatentable over Blumenau in view of Casorso.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs[1] and Answer for their respective details.

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the Examiner, the arguments in support of the rejection, and the evidence of obviousness relied upon by the Examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellants' arguments set forth in the Briefs along with the Examiner's rationale in support of the rejection and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in appealed claims 1-23 and 36-40. We reach the opposite conclusion with respect to the Examiner's obviousness rejection of claims 24-30, and 34. Accordingly, we affirm-in-part.

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[1] The Appeal Brief was filed December 19, 2005. In response to the Examiner's Answer mailed March, 2006, a Reply Brief was filed April 19, 2006 which was acknowledged and entered by the Examiner as indicated in the communication mailed July 17, 2006.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v, John Deere Co.,* 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). The Examiner cannot simply reach conclusions based on the Examiner's own understanding or experience – or on his or her assessment of what would be basic knowledge or common sense. Rather, the Examiner must point to some concrete evidence in the record in support of these findings. *In re Zurko*, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). Thus the Examiner must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the Examiner's conclusion. These showings by the Examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. *Note In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See Id.; In re Hedges*, 783 F.2d 1038, 1040, 228 USPQ 685, 687 (Fed. Cir. 1986); *In re Piasecki,* 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and *In re Rinehart,* 531 F.2d 1048, 1051, 189 USPQ 143, 146-147 (CCPA 1976).

With respect to appealed independent claims 1 and 12, Appellants' arguments in response to the obviousness rejection assert a failure by the Examiner to establish a prima facie case of obviousness since all of the

claimed limitations are not taught or suggested by the applied prior art references. After reviewing the applied Blumenau and Casorso references in light of the arguments of record, we are in general agreement with Appellants' position as stated in the Briefs.

In particular, we agree with Appellants (Br. 10, Reply Br. 2-3) that, in contrast to the claimed invention, the Blumenau reference has no disclosure of the storage of a second copy of a mapping table in the non-volatile memory of a controller. The Examiner has cited to several passages in Blumenau (col. 14, ll. 31-33, col. 21, ll. 35-40, and col. 32, ll. 43-54) which disclose that a second or back-up copy of the mapping table is stored in the storage volumes of the cached storage subsystem. While the Examiner has taken the position (Answer, 4, 12) that these storage volumes correspond to the claimed controller, we find no basis on the record before us that would support such a conclusion.

In our view, as also asserted by Appellants, the storage volumes described by Blumenau can not be reasonably interpreted as being a controller since they are merely logical units of storage which are distributed over various storage devices 29-31 (Blumenau, col. 88, ll. 28-35). This interpretation is supported by the illustration in Figure 1 of Blumenau which shows that the storage volumes 28-31, while part of the storage subsystem 20, are in fact a separate entity from the storage controller 27. We further make the observation that, to whatever extent the Examiner is correct in the assertion that the backup copy of the mapping table in Blumenau intermittently replaces the first copy of the table in the mapping agent, the claimed limitations are not satisfied since the backup copy of the mapping table is not in a controller as claimed.

We have also reviewed the Casorso reference which has been added to Blumenau to provide a disclosure of mapping virtual disk positions to locations on storage devices instead of virtual ports or addresses as in Blumenau. We find nothing in the disclosure of Casorso, however, which overcomes the deficiencies of Blumenau discussed *supra*.

In view of the above discussion, since we are of the opinion that the proposed combination of the Blumenau and Casorso references set forth by the Examiner does not support the obviousness rejection, we do not sustain the rejection of independent claims 1 and 12, nor of claims 2-11, 13-23, and 36-40 dependent thereon.

Turning to a consideration of the Examiner's 35 U.S.C. § 103(a) rejection, based on the combination of Blumenau and Casorso, of independent claim 24, we note that, while we found Appellants' arguments to be persuasive with the respect to the Examiner's obviousness rejection of claims 1-23 and 36-40, we reach the opposite conclusion with respect to the rejection of claim 24. Although Appellants argue (Br. 13) that the Examiner is relying solely on the mapping tables illustrated in Figures 23-25 of Blumenau in addressing the language of claim 24, a review of the Examiner's position (Final Office Action 8; Answer 8) reveals that this is simply not the case. In fact, the Examiner has cited several portions of the disclosure of Blumenau which, in our view, supports the conclusion that Blumenau discloses the specifying of a block on a virtual disk as claimed. Further, it is our opinion that Blumenau, when combined with Casorso, would have suggested the claimed accessing of a table which maps the block to a storage location on a storage device.

We further find no persuasive argument from Appellants which convinces us of any error in the Examiner's finding that the logical unit numbers (LUNs) described by Blumenau correspond to the claimed "block" on a virtual disk. Further, although Appellants' arguments at pages 8 and 9 of the Reply Brief, emphasize that the language of claim 24 requires that the operation of specifying a block occurs "within the operation," we fail to see how the specified block access disclosed by Blumenau could exist anytime or anyplace except "within the operation" of accessing a virtual disk. Accordingly, since it is our view that the Examiner's prima facie case of obviousness based on the combination of Blumenau and Casorso has not been overcome by any convincing arguments from Appellants, the Examiner's 35 U.S.C. § 103(a) rejection of claim 24, as well as claims 25-30 and 34 not separately argued by Appellants, is sustained.

CONCLUSION

In summary, with respect to the Examiner's 35 U.S.C. § 103(a) rejection, we have not sustained the rejection of claims 1-23 and 36-40, but have sustained the rejection of claims 24-30 and 34. Accordingly, the Examiner's decision rejecting appealed claims 1-30, 34, and 36-40 is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv)(effective September 13, 2004).

AFFIRMED-IN-PART

ELD/GW

HEWLETT PACKARD COMPANY
P.O. BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400